

### REMARKS

Applicant has carefully reviewed the office action mailed December 27, 2005 and offers the following remarks to accompany the above amendments.

Applicant has amended each of the independent claims 1, 15, 29, and 35 to incorporate the subject matter of dependent claims 4, 18, 32, and 38, respectively. Claims 4, 18, 32, and 38 have been cancelled. Dependent claims 5-8, 19-24, 26-28, 33, 34, 39, and 40 have been amended to correct dependencies and maintain consistency.

Claims 1-3, 11-17, 25-31, and 35-37 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Gore et al. (hereinafter "Gore") in view of Sugar et al. (hereinafter "Sugar"). In light of the amendments, which incorporate the subject matter of claims 4, 18, 32, and 38 into respective independent claims 1, 15, 29, and 35, the rejections based on Gore and Sugar are now moot.

Claims 4-10, 18-24, 32-34, and 38-40 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Gore in view of Sugar and further in view of Ling et al. (hereinafter "Ling"). Applicant respectfully traverses. For the Patent Office to establish *prima facie* obviousness, the Patent Office must show where each and every claim element can be found in the combination of references. MPEP § 2143.03. Further, the Patent Office is not allowed to extract isolated portions of the references; rather, the references must be considered in their entireties. MPEP § 2141.02.

Prior to analyzing the rejection, an overview of the claimed invention is provided. The claimed invention allows a wireless communication system, such as a base station, to select  $N$  antennas from an associated group of  $M$  antennas for transmitting multiple streams of data to a given user. Based on the channel conditions between the  $M$  antennas of the wireless communication system and the multiple antennas at the receiver, the  $N$  antennas to use for transmission are selected to enhance channel capacity, signal-to-noise ratios, or a combination thereof. In addition, one or more of the  $M$  antennas, other than the selected  $N$  antennas, are used to redundantly transmit corresponding data streams. The redundant data streams are weighted in a manner allowing the redundant data stream to reinforce a corresponding data stream transmitted from one of the  $N$  antennas in the transmission channel. Further, the primary data stream, which is to be reinforced, may also be weighted prior to transmission.

As amended, each of the independent claims 1, 15, 29, and 35 require selecting N antennas from M available antennas and transmitting N data streams via the N antennas. In addition, a weighted version of at least one of the N data streams is transmitted over one or more antennas other than the primary N antennas.

Even if Gore and Sugar disclose selecting N antennas from M available antennas and transmitting N data streams via the N antennas, Ling fails to teach or suggest using the additional antennas for redundancy on top of the MIMO transmission technique being employed. In particular, Ling is always choosing a transmission technique based on the N available antennas. Whether redundancy or weighting is employed, the transmission technique provides N data streams for N antennas.

Gore also provides transmission techniques employing N data streams for N antennas. In fact, every technique disclosed in Ling could readily be employed in Gore, without using any antennas in addition to the selected N antennas. For example, Gore's system could select the N antennas for the N RF chains. Any of Ling's transmission techniques could then be employed for the N antennas. Ling's weighting or redundancy would simply be provided within the N data streams and for the N antennas. There is no need for using the unselected antennas of Gore. In other words, both Gore and Ling are directed to  $N \times M$  MIMO systems and are compatible with one another without modification. Both employ the same or similar space-time coding techniques. Ling's weighing and redundancy techniques are simply modifications to the transmission techniques introduced by Gore. In contrast, the claimed invention is essentially an  $N+A \times M$  MIMO system, where A represents the additional antennas.

Since Gore can support all of the functionality of Ling without need for modification, one of ordinary skill in the art would not be motivated to modify these systems to arrive at the claimed invention. Since Gore can support Ling with modification, the combination fails to teach or suggest the use of the redundant data streams and additional antennas. Since the combination fails to teach or suggest each and every element of the claimed invention, the claims define patentable subject matter.

The Patent Office cannot pick and arrange elements outside of the context of the combination. The teachings of the references cannot be ignored or poisoned with hindsight.

Claims 13 and 27 deserve special mention. After a review of both Gore and Sugar, there is no disclosure or suggestion of selecting the N antennas using a maximum determinant from channel matrices representing the channel conditions. As such, the combination of Gore and Sugar fails to teach or suggest this element.

In light of the above, independent claims 1, 15, 29, and 35 define patentable subject matter. The dependent claims 2, 3, 5-14, 16, 17, 19-28, 30, 31, 33, 34, 36, 37, 39, and 40 further define the patentable subject matter of independent claims 1, 15, 29, and 35. As such, each the pending claims 1-3, 5-17, 19-31, 33-37, 39, and 40 are in condition for allowance and such action is respectfully requested. The Examiner is encouraged to contact Applicant's representative regarding any remaining issues in an effort to expedite allowance and issuance of the present application.

Respectfully submitted,

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